UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/725,704	11/29/2000	Thomas J. Cloonan	4807.00017	8828

7590 05/21/2004

JOHN L. DOUGHTY
ARRIS INTERNATIONAL, INC.
11450 TECHNOLOGY CIRCLE
DULUTH, GA 30097

EXAMINER	
LAMBRECHT, CHRISTOPHER M	
ART UNIT	**PAPER NUMBER**
2611	8

DATE MAILED: 05/21/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/725,704	Applicant(s) CLOONAN ET AL.	
	Examiner Christopher M. Lambrecht	Art Unit 2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-28 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-28 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on 12 March 2001 is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date 5.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1-3, 5, 6-8 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Quigley (Quigley et al., US20010055319A1) in view of Fijolek (Fijolek et al., US006553568B1) and Simmons (Simmons et al., US006332198B1).

With regard to claims 1 and 6, Quigley discloses a cable modem termination system (CMTS) (Headend 1012, fig. 2) with a plurality of active cable interface circuits (line cards 1042, ¶135, lines 8-11), each of which transfers data signals to a plurality of cable modems (12) (¶135, lines 1-5), each cable modem receiving said data signals through a corresponding one active cable interface circuit (plurality of cable modems communicate with one cable modem termination system, ¶134, where cable modem termination system is defined by line card 1042, ¶132), and at least one additional cable interface circuit (CMTS, defined by line card 1042, ¶132) capable of communicating with any of said plurality of cable modems (¶137). Quigley fails to disclose in the transfer of said data signals to each of said cable modems being enabled according to a set of service parameters for each cable modem of said plurality of cable modems that is stored in the cable modem's corresponding active cable interface circuit, said CMTS also having at least one spare cable interface circuit, a method of routing said data signals to at least one of said cable modems through said spare cable interface circuit comprised of the steps of: copying said

service parameters of said first active cable interface circuit into said spare cable interface circuit; on the failure of a first active cable interface circuit, routing said data signals destined for said at least one cable modem through the spare cable interface circuit according to said first set of parameters for said first active cable interface copied into said spare cable interface circuit.

In an analogous art, Fijolek discloses in a cable modem termination system (CMTS 12, fig. 6), the transfer of said data signals to each of said cable modems is enabled according to a set of service parameters (service identifiers SIDs, define a mapping between cable modem 16 and CMTS 12, col. 20, lines 49-54, listed in Table 12) for each cable modem of said plurality of cable modems (where Fijolek teaches a data-over-cable system includes a plurality of cable modems (col. 6, lines 39-42), represented by CM 16), and SIDs are unique for each cable modem represented by CM 16, col. 20, lines 60-62), said CMTS also having at least one spare cable interface circuit (CMTS' 12, col. 16, ll. 606-65), a method of routing data signals to at least one cable modem (CM 16) through said spare cable interface circuit (CMTS' 12) comprised of the steps of: on the failure of a first active cable interface circuit, routing said data signals destined for said at least one cable modem through the spare cable interface circuit (col. 16, line 60 – col. 17, line 5), for the purpose of preventing loss of service in the event of a cable interface circuit failure (col. 17, lines 1-2). Fijolek fails to disclose wherein said service parameters are stored in the corresponding active cable interface circuit, a method comprised of the steps of: copying said service parameters of said first active cable interface circuit into said spare cable interface circuit; routing said data signals according to said first set of parameters for said first active cable interface copied into said spare cable interface circuit.

Additionally, in an analogous art, Simmons discloses wherein said service parameters (connection data CD 508, fig. 33a, col. 42, lines 63-67) are stored in the corresponding active cable interface circuit (16a, fig. 33a, col. 42, lines 39-41), a method comprised of the steps of: copying said service parameters of said first active cable interface circuit (16a) into said spare cable interface circuit

(16n, col. 42, lines 39-41) (col. 42, line 67 – col. 43, line 1, copying has inherently occurred where a copy of connection data of primary line card resides on backup line card); routing said data signals according to said first set of parameters for said first active cable interface copied into said spare cable interface circuit (col. 43, lines 1-8, where back-up line card begins transmitting network data over connections previously established by failed line card) for the purpose of maintaining synchronization between the active and backup line cards such that the time to transfer data over previously established connections is minimized (col. 43, lines 1-5).

Consequently, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the system of Quigley to include in a cable modem termination system, the transfer of said data signals to each of said cable modems is enabled according to a set of service parameters for each cable modem of said plurality of cable modems, said CMTS also having at least one spare cable interface circuit, a method of routing data signals to at least one cable modem through said spare cable interface circuit comprised of the steps of: on the failure of a first active cable interface circuit, routing said data signals destined for said at least one cable modem through the spare cable interface circuit, as taught by Fijolek, for the purpose of preventing loss of service in the event of a cable interface circuit failure in a cable modem termination system.

Furthermore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the system of Quigley and Fijolek to include wherein said service parameters are stored in the corresponding active cable interface circuit, a method comprised of the steps of: copying said service parameters of said first active cable interface circuit into said spare cable interface circuit; routing said data signals according to said first set of parameters for said first active cable interface copied into said spare cable interface circuit, as taught by Simmons, for the purpose of maintaining synchronization between the active and backup line cards such that the time to transfer data over previously established connections is minimized in a cable modem termination system.

With regard to claims 2 and 7, Simmons further discloses copying a plurality of parameter sets (CD 504, 506, 508, fig. 33a), for a plurality of active cable interface (16a-16n) circuits into said spare interface circuit (16n) (col. 42, lines 53-63), for the purpose of quickly synchronizing backup hardware in the event of a primary card failure.

Consequently, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the combined system of Quigley, Fijolek, and Simmons to include copying a plurality of parameter sets, for a plurality of active cable interface circuits into said spare interface circuit, as further taught by Simmons, for the purpose of quickly synchronizing backup hardware in the event of a primary card failure in a cable modem termination system.

With regard to claims 3 and 8, Simmons further discloses reading said set of parameters from said first active cable interface circuit (16a) from memory (where information can be retrieved from backup processes 464-467 executing on line card 16a, col. 41, ll. 20-38, wherein "backup" inherently involves a memory) comprising said first active cable interface circuit (retrieving active state from backup processes 464-467 running on failed interface card, col. 43, lines 9-24); and, transferring (active state retrieved, col. 43, lines 25-34) the first set of parameters that were read from said first active cable interface into said spare interface circuit, for the purpose of quickly resuming the transmission of network data (col. 43, lines 25-35).

Consequently, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the system of Quigley, Fijolek, and Simmons to include reading said set of parameters from said first active cable interface circuit from memory comprising said first active cable interface circuit; and, transferring the first set of parameters that were read from said first active cable

interface into said spare interface circuit, as further taught by Simmons, for the purpose of quickly resuming the transmission of network data in a cable modem termination system.

With regard to claims 5 and 10, Quigley, Fijolek, and Simmons together disclose the claimed subject matter. In particular, Fijolek discloses said first set of parameters includes downstream channel parameters (Protocol type, B16, table 12, col. 21).

3. Claims 4 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Quigley, Fijolek, and Simmons as applied to claims 1 and 6 above, and further in view of Salee (US 20020088003A1).

With regard to claims 4 and 9, Quigley, Fijolek, and Simmons together disclose reading said parameters from said first active cable interface card (retrieving active states from failed line card; Simmons, col. 43, lines 20-24); and transferring the first set of parameters into said spare interface circuit (backup line card retrieves active states from failed line card; Simmons, col. 43, lines 25-35). Quigley, Fijolek, and Simmons together fail to disclose reading from a System Controller for said CMTS; and, transferring those data that were read from said System Controller.

In an analogous art, Salee discloses reading (monitoring) from a system controller (monitor 110, fig. 2) for said CMTS; and transferring those data (analog transmission parameters) that were read from said system controller (monitoring transmission parameters of master module 100, and setting transmission parameters of slave 200, via switch 126, ¶18), for the purpose of ensuring seamless transfer when a master transmission module fails.

Consequently, it would have bee obvious to one of ordinary skill in the art at the time the invention was made to modify the system of Quigley, Fijolek, and Simmons to include reading from a system controller for said CMTS; and transferring those data that were read from said system controller,

as taught by Salee, for the purpose of ensuring seamless transfer when a master transmission module fails in a cable modem termination system.

4. Claims 11-15, 17, 20-24, and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Salee in view of Wu (US006698022B1).

With regard to claims 11 and 20, Salee discloses in a cable modem termination system (CMTS) (fig. 1) with a plurality of cable interface circuits (CMTS MAC chip 10, 20), each of which includes a cyclical timing counter (timer 24, ¶13, lines 13-15) that provides timing signals to cable modems coupled to each of said interface circuits (¶12, lines 6-9), a method of synchronizing the timing counter of a first cable interface circuit (20) to the timing counter of a second cable interface circuit (10) comprised of the steps of: copying a future timing counter value (preset digital number P, ¶13, lines 15-20) into a storage device (preset register 26, performed by processor, ¶14, lines 28-31); and, copying said future timing counter value from said storage device (26) into said timing counter (24, of second or "slave" circuit 20) (¶14, lines 21-25). Salee fails to explicitly disclose copying a first value of said timing counter of said first cable interface circuit into a storage device; and, adding an offset to said first value to create a future timing counter value.

In an analogous art, Wu discloses copying a first value of a timer counter (timestamp T_i) of a cable interface circuit (CMTS, col. 4, lines 55-60) into a storage device (memory, col. 6, lines 47-51); and, adding an offset (C_i) to said first value to create a future timing counter value (col. 7, lines 29-31), for the purpose of accurately synchronizing a second local clock to a CMTS master clock (Col. 8, lines 5-11).

Consequently, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the system of Salee to include copying a first value of a timer counter of a

cable interface circuit into a storage device; and, adding an offset to said first value to create a future timing counter value, as taught by Wu, for the purpose of accurately synchronizing a second local clock to a CMTS master clock in a cable modem termination system.

With regard to claims 12, 13, 21, and 22, Salee and Wu together disclose the claimed subject matter. In particular, Salee discloses wherein said step of copying said future timing value (P) from said storage device (26) into said timing counter (24) includes the step of: waiting (count register is incrementing, ¶14, lines 5-10) a predetermined length of time ((preset number P) - (current timer count T)) until said timing counter is substantially equal to said future timing counter value (T=P); copying said future timing counter value (P) from said storage device (26) into said timing counter (¶14, lines 10-25).

With regard to claims 14 and 23, Salee and Wu together disclose the claimed subject matter. In particular, Salee discloses where said step of copying said future timing value (P) from said storage device (26) into said timing counter (24) includes the step of: triggering the transfer of said future timing counter value (P) from said storage device (26) into said timing counter (24) (¶14, lines 10-25) from a System Controller for said CMTS (CMTS MAC chip master 10).

With regard to claims 15 and 24, Salee discloses a cable modem termination system (CMTS) (fig. 1) with a plurality of interface circuits (CMTS MAC chips 10, 20), each of which includes a cyclical timing counter (timer 24, ¶13, lines 13-15) that provides timing signals to cable modems coupled to each of said interface circuits (¶12, lines 6-9), said CMTS comprising: a System Controller means (master MAC chip 10) for: copying said future timing counter value (preset digital number P, ¶13, lines 15-20) from a storage device (preset register 26) into said timing counter (system timer 24) (¶14, lines 21-25). Salee fails to explicitly disclose copying a first value of said timing counter of said first cable interface

circuit into a storage device; and, adding an offset to said first value to create a future timing counter value.

In an analogous art, Wu discloses copying a first value of a timer counter (timestamp T_i) of a cable interface circuit (CMTS, col. 4, lines 55-60) into a storage device (memory, col. 6, lines 47-51); and, adding an offset (C_1) to said first value to create a future timing counter value (col. 7, lines 29-31), for the purpose of accurately synchronizing a second local clock to a CMTS master clock (Col. 8, lines 5-11).

Consequently, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the system of Salee to include copying a first value of a timer counter of a cable interface circuit into a storage device; and, adding an offset to said first value to create a future timing counter value, as taught by Wu, for the purpose of accurately synchronizing a second local clock to a CMTS master clock in a cable modem termination system.

With regard to claims 17 and 26, Salee and Wu together disclose the claimed subject matter. In particular, Salee discloses said system controller is an application specific integrated circuit (MAC chip master 10, where a chip is an integrated circuit).

5. Claims 16 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Salee and Wu as applied to claims 15 and 24 above, and further in view of Quigley.

With regard to claims 16 and 25, Salee and Wu fail to disclose said system controller is a microprocessor.

Quigley discloses a system controller (TDMA controller 3004, fig. 80) is a microprocessor (¶550, lines 10-15), for the purpose of enabling programming of the system controller (¶550, lines 10-15).

Consequently, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the system of Salee and Wu to include said system controller is a microprocessor, as taught by Quigley, for the purpose of enabling programming of the system controller in a cable modem termination system.

6. Claims 18 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Salee and Wu as applied to claim 15 and 24 above, and further in view of Wang (US 20020043995A1).

With regard to claims 18 and 27, Salee and Wu fail to explicitly disclose said System Controller is a field programmable gate array (FPGA).

In an analogous art, Wang discloses a system controller (processing unit) is a FPGA (programmable logic device 121, fig. 1), for the purpose of providing the advantages of fixed integrated circuits with the flexibility of custom integrated circuits (¶28, lines 6-13).

Consequently, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the system of Salee and Wu to include said system controller is a FPGA, as taught by Wang, for the purpose of providing the advantages of fixed integrated circuits with the flexibility of custom integrated circuits in a cable modem termination system.

7. Claims 19 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Salee and Wu as applied to claim 15 and 24 above, and further in view of Florine (4,700,326).

With regard to claims 19 and 28, Salee and Wu fail to disclose said System Controller is sequential logic.

In an analogous art, Florine discloses a system controller is sequential logic (col. 9, lines 32-36) for the purpose of providing flexibility and predictability (col. 9, lines 32-36).

Consequently, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the system of Salee and Wu to include said system controller is sequential logic, as taught by Florine, for the purpose of providing flexibility and predictability in a cable modem termination system.

Conclusion

8. The following are suggested formats for either a Certificate of Mailing or Certificate of Transmission under 37 CFR 1.8(a). The certification may be included with all correspondence concerning this application or proceeding to establish a date of mailing or transmission under 37 CFR 1.8(a). Proper use of this procedure will result in such communication being considered as timely if the established date is within the required period for reply. The Certificate should be signed by the individual actually depositing or transmitting the correspondence or by an individual who, upon information and belief, expects the correspondence to be mailed or transmitted in the normal course of business by another no later than the date indicated.

Certificate of Mailing

I hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to:

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

on _____.
(Date)

Typed or printed name of person signing this certificate:

_____

Signature: _____

Certificate of Transmission

I hereby certify that this correspondence is being facsimile transmitted to the United States Patent and Trademark Office, Fax No. (703)_____ - _____ on _____.
(Date)

Typed or printed name of person signing this certificate:

_____

Signature: _____

Please refer to 37 CFR 1.6(d) and 1.8(a)(2) for filing limitations concerning facsimile transmissions and mailing, respectively.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christopher M. Lambrecht whose telephone number is (703) 305-8710. The examiner can normally be reached on 9:30 AM - 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the primary examiner, Christopher Grant can be reached on (703) 305-4755. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Christopher M. Lambrecht
Examiner
Art Unit 2611

CML

CHRIS GRANT
PRIMARY EXAMINER